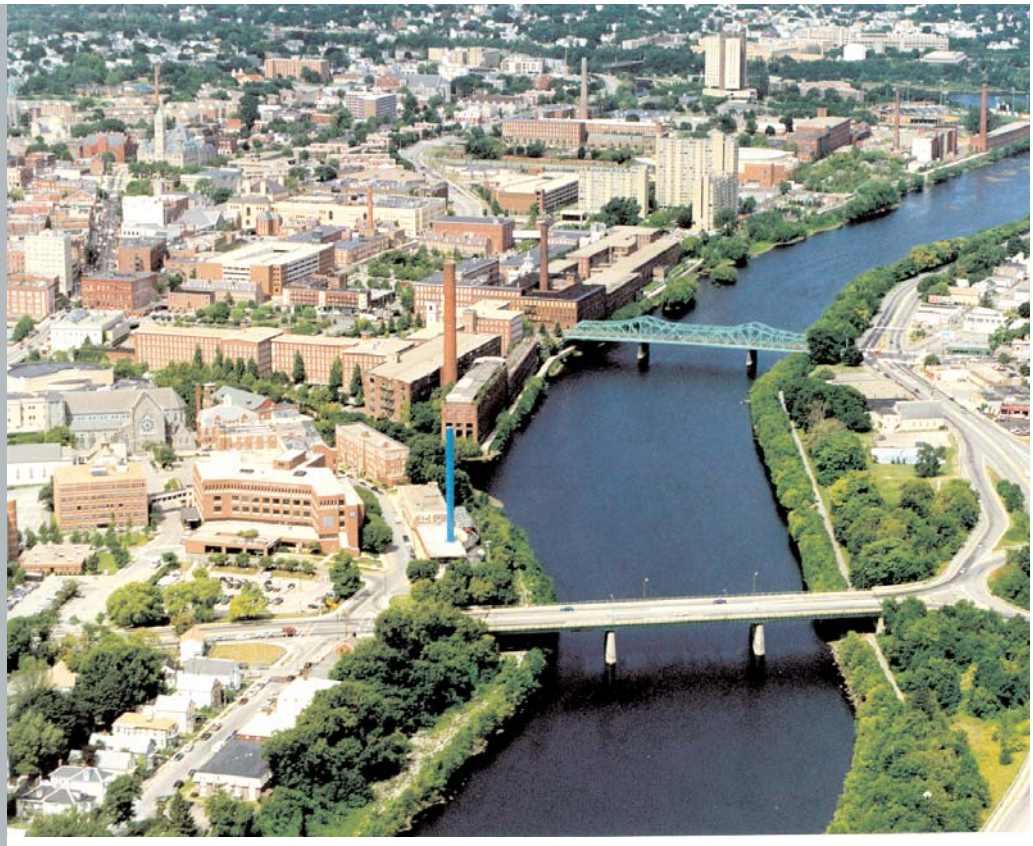
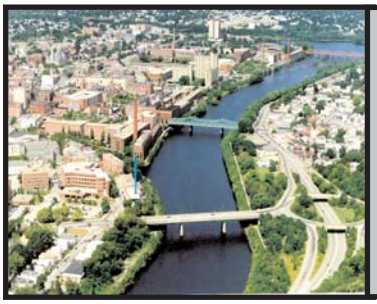


Overlooking Downtown Lowell and the Merrimack River

11

SUSTAINABILITY



Goal Statement

Lowell will be a model for sustainable development practices and environmental sensitivity in an urban setting.

As Lowell plans for the future, it must focus on adopting eco-friendly practices throughout the City that encourage sustainable development and preservation of our natural resources. Not only will these practices help to protect and preserve the natural environment, but they will also be cost-effective in the long term, improve the quality of life for residents, and enhance Lowell's economy overall.

By positioning itself at the forefront of the movement toward sustainable development practices, as it did in the 1970s with historic preservation, Lowell can continue to promote itself as a leader among America's smaller cities. Greener building will also assist in minimizing the fiscal impacts of new developments on municipal finances by reducing demands placed on the utility and transportation infrastructure as well as waste generation.

Lowell is in an excellent position to promote one particular aspect of sustainability; the adoption of efficient, urban-scale patterns of land development. By promoting quality urban living in Lowell, we can serve as a model of development practices that conserve land and foster less environmentally disruptive patterns of activity. Thus, efforts to improve the quality of life and economic vitality of Lowell should be considered part of the City's sustainability efforts.

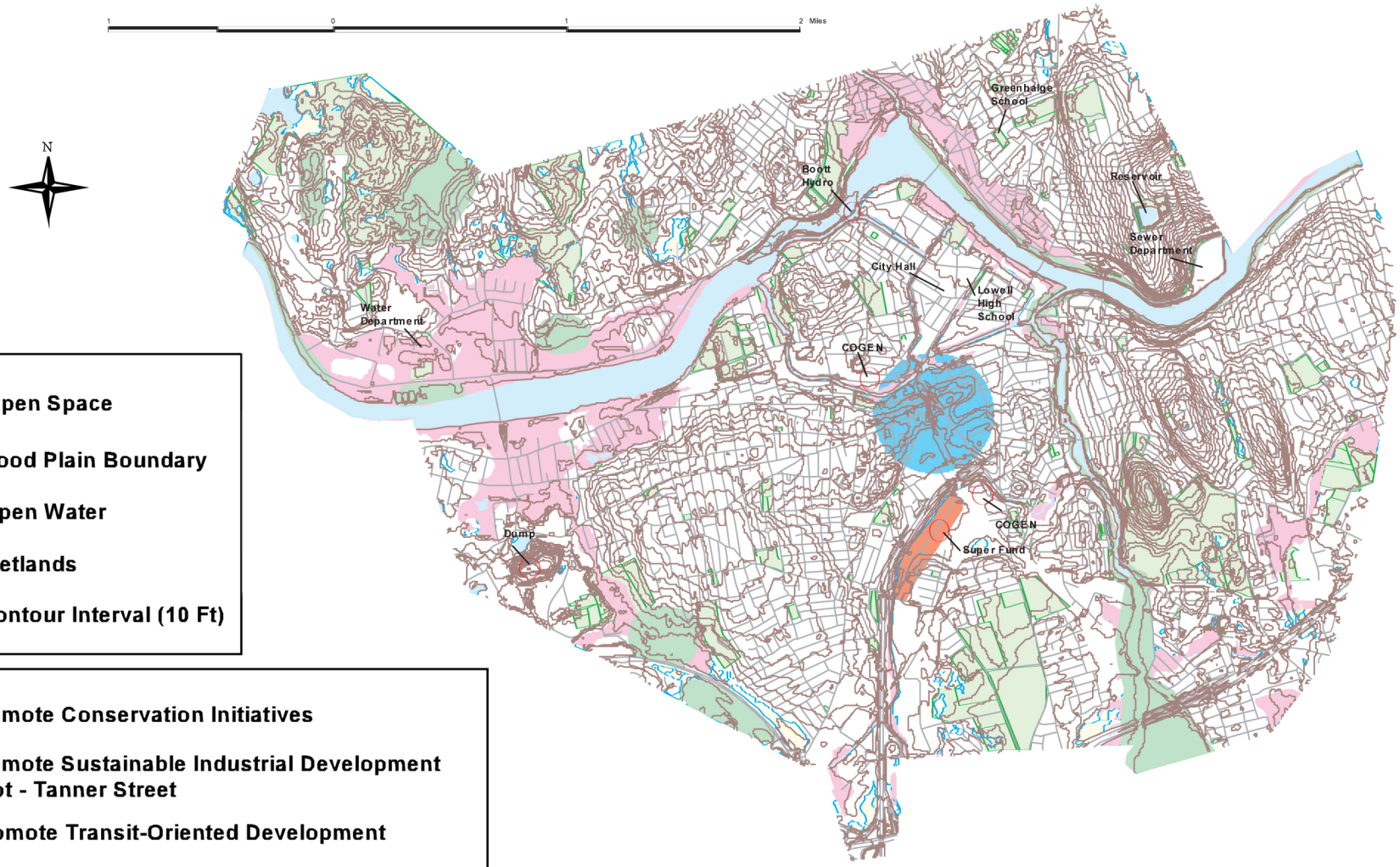
Figure 11-1
Urban vs. Suburban Energy Use Per Household

	Urban Families			Suburban Families		
	Energy (MMBtu/yr)	Cost ($/yr)	CO_2 (tons/yr)	Energy (MMBtu/yr)	Cost ($/yr)	CO_2 (tons/yr)
Travel	80	910	6	140	1,670	11
Home	100	1,220	12	110	1,340	14
Community fraction*	140	1,650	21	190	2,280	29
	320	3,780	39	440	5,290	54

*Community fraction includes household share of all non-residential energy use and community infrastructure energy use.

MMBTu stands for one million BTUs (British Thermal Unit)

Source: The Energy Yardstick



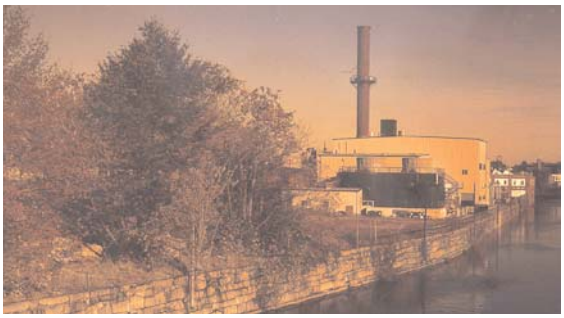
Sustainability

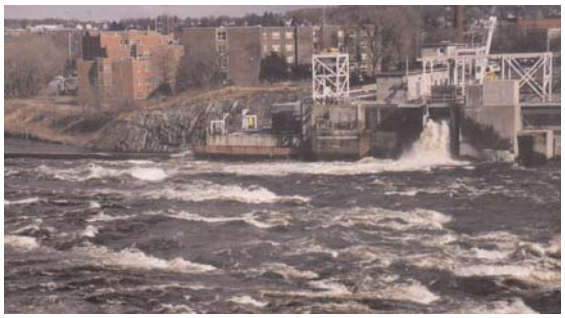
LOWELL COMPREHENSIVE PLAN
May 2003

11.1 Recommendations and Action Steps:

11.1.1 IDENTIFY OPPORTUNITIES FOR UNIQUE PILOT PROJECTS FOR SUSTAINABLE DEVELOPMENT MODELS AND ALTERNATIVE ENERGY SOURCES TO INCREASE COST-EFFECTIVENESS AND EFFICIENCY.

Figure 11-2
A Mix of Energy Sources in Lowell - Cogeneration Plant (Left) and Hydroelectric Power From the Merrimack River (Right)





Action Step: Incorporate requirements and/or incentives into zoning regulations for redevelopment areas aimed at industrial development.

Action Step: Prioritize projects that will highlight Lowell's commitment to sustainable practices and attract creative, environmentally aware businesses and individuals to the City.

Action Step: Consider going forth with innovative environmental remediation pilot studies such as phytoremediation* and bioremediation*, furthering Lowell's reputation as a national model for brownfields redevelopment.

Action Step: Identify needs and funding sources to improve infrastructure that would support the development of brownfield sites, focusing on the Tanner Street Initiative.

Action Step: Facilitate partnerships with programs at UMass Lowell, such as the Toxic Use Reduction Institute, that are involved in sustainable development research.

Figure 11-3
LeLacheur Park
A Redeveloped Waterfront Brownfield

11.1.2 PROVIDE A REGULATORY STRUCTURE THAT REWARDS SUSTAINABLE DEVELOPMENT INITIATIVES THAT ARE ECO-FRIENDLY AND DISCOURAGES THOSE PROJECTS THAT COULD BE DETRIMENTAL TO THE ENVIRONMENT.

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* **Phytoremediation** is the removal of contaminants through the biological action of plants.

* **Bioremediation** is the removal of contamination through the biological function of microbes.

Action Step: Adopt zoning and building code regulations that provide incentives for sustainable development practices.

Action Step: Identify and appropriately regulate through zoning and the Board of Health, but do not prohibit, alternative energy and waste reduction technologies including solar panel and windmill installation and on-site composting.

11.1.3 IMPROVE THE UNDERSTANDING OF SUSTAINABLE TECHNOLOGIES, AND THEIR APPLICATION TO LOWELL'S UNIQUE CONSTRAINTS AND OPPORTUNITIES, AMONG LOWELL'S BUSINESSES, RESIDENTS, AND GOVERNMENT.

Action Step: Actively seek information on newer technologies and funding mechanisms from federal, state, nonprofit, and private sector sources. Promote discussions with other cities on programs related to sustainability goals.

Action Step: Develop a public education program for residents, business owners, and developers, that promotes understanding of sustainability issues and emerging technologies. Utilize high-visibility media such as museum exhibits, web pages, and educational prototypes, and pilot projects.

11.1.4 THE CITY OF LOWELL SHOULD SET AN EXAMPLE OF SUSTAINABLE BUILDING WITH MUNICIPAL FACILITIES.

Figure 11-4
Solar-Roofed House

Action Step: Build on the nationally-recognized model set by the Lowell Wastewater Treatment Plan and adopt a comprehensive environmental management system for all City facilities, including schools.

Action Step: Incorporate sustainable building practices into the design and construction of new municipal facilities.

Action Step: Retrofit existing buildings to increase energy conservation and reduce the use of nonrenewable resources.

Action Step: Incorporate alternative energy, conservation, and other sustainable building practices into rehab projects managed or financed by the City of Lowell. Consider the environmental impacts of material manufacture and disposal when choosing building materials.

Action Step: Incorporate biroretention* practices into all new municipal parking lots and encourage these practices in private developments.

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* **Bioretention** is the process of retaining storm water in vegetated areas, in order to maximize the uptake of water by the plants and minimize run-off into storm drains and channels.

Action Step: Incorporate xeriscaping principles (water conserving landscape design) into all municipal green spaces.

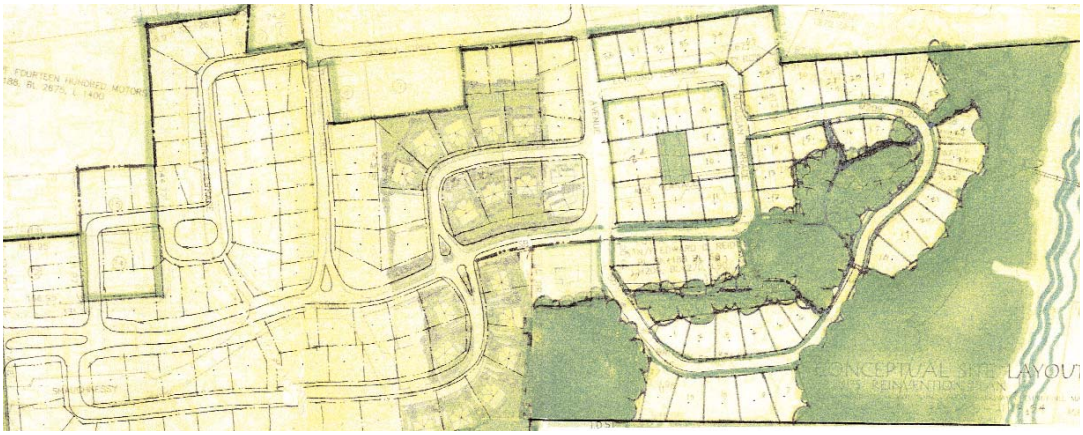
Figure 11-5
Green Housing: Eco-Friendly Design Practices and Building Materials in Dorchester

Action Step: Continue to implement planning and construction to resolve the combined sewer overflow (CSO) problem.

11.1.5 IDENTIFY PRIME CONSERVATION OPPORTUNITIES AND SEEK TO PRESERVE REMAINING AND APPROPRIATE OPEN SPACE PARCELS.

Action Step: Encourage cluster development* (as opposed to conventional subdivisions) on undeveloped land near the state forest as a means of preserving additional tracts of land.

Figure 11-6
Waterfront Conservation Subdivision Design



Action Step: Encourage the development of a water-processing park at East Pond and the widening of the River Meadow Brook, two components of the Tanner Street Initiative.

Action Step: Promote conservation and compatible usage of the Concord River Greenway.

* **Cluster Development** is a type of residential development that locates buildings and infrastructure on a portion of the site at higher than average density and preserves the rest of the site as open space.

Action Step: Dedicate sensitive parcels of City-owned land to permanent conservation.

Action Step: Develop a greenway system, including a neighborhood trail, between the State Forest and the north bank of the Merrimack River.

11.1.6 REDUCE SOLID WASTE GENERATED IN LOWELL BY INCREASING RECYCLING RATES WITHIN THE CITY, AND INCREASING THE USE OF RECYCLED MATERIALS, WHILE REDUCING MUNICIPAL COSTS.

Action Step: Adopt a "pay as you throw" program for municipal trash collection that encourages recycling by charging users for the trash they generate by volume and collecting recyclables for free.

Action Step: Institute a comprehensive recycling program in all municipal offices.

Action Step: Invest in recycling pilot programs for municipal facilities, especially schools, which generate large amounts of trash.

Action Step: Develop a program to provide all new residents, including renters, with information on how to participate in the City's recycling program.

Action Step: Encourage the use of recycled products as raw materials in manufacturing by actively recruiting these businesses and connecting them with existing and new financial incentive programs linked to this goal.

Action Step: Adopt purchasing and procurement guidelines that favor recyclable products and those with high post-consumer content.

Action Step: Implement “greener” waste collection methods, including the use of trucks for curbside collection of both trash and recyclables in a single trip, thereby reducing fuel consumption and reducing the likelihood that recyclables are accidentally collected as trash.